



Case Presentation

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URINE

- Red
- Orange urine
- Blue or green urine
- Dark brown or cola-colored urine
- Black





COLOR OF YOUR URINE

Says About Your Health



Case I

Referral letter

- A 17 yrs-old female with type I DM 9 years ago on insulin therapy presented with a 5-day history of facial swelling and right loin pain associated with a 2-day history of reduced urine output.
- Her blood pressure was 150/85. In addition, her urine is dark in colour (the patient described it as “like coke”). Urine dipstick showed pt+++, and blood++++ for renal team assessment .







How would you classify
or describe her
presentation?

Typical feature of nephritic syndrome

- Acute renal dysfunction
- Micro/macrosopic hematuria
- Hypertension
- **Proteinuria**
- **edema**

What is the differential diagnosis of Nephritic syndrome

Primary GN

- IgA nephropathy
- MPGN
- RPGN, crescentic GN
- FSGS" often with proteinuria"

Secondary GN

- Post-infectious GN
- Goodpasture's S
- SLE
- Vasculitis
- HSP
- Systemic sclerosis
- cryoglobulinemia

What further feature of history would you explore?

To identify the cause

- ❑ Ask about preceding illness specially infection (pharyngitis, skin infection)
- ❑ Ask about systemic symptoms (fever, arthritis, skin rash, respiratory symptoms).
- ❑ Ask about medication
- ❑ Ask about family hx of similar, renal or autoimmune condition
- ❑ Ask about past hx of similar condition

Patient history

- She was normally fit and well until 3 weeks ago she had sever tonsillitis.
- She was given a 5-day course of penicillin
- Tonsillitis cleared but she continued to feel quite tired and lethargic
- 5 days later she noticed a little swollen face only at the morning hours
- Since then her leg become swollen and her urine become dark " like coke" and small in amount

- She tried to drink more water to “make her urine less concentrated” but this only led to more LL swelling
- No past hx of any other medication
- No family hx of similar condition, renal, or autoimmune disorder

On examination

- Significant pitting LL edema to the knee
- No rash or skin lesions
- Her pharynx was not erythematous
- +ve palpable cx LN (1 cm in diameter)
- Pulse 80 b/min, blood pressure 155/85
- JVP was not elevated
- Heart and chest were clear
- No abdominal organomegaly or tenderness



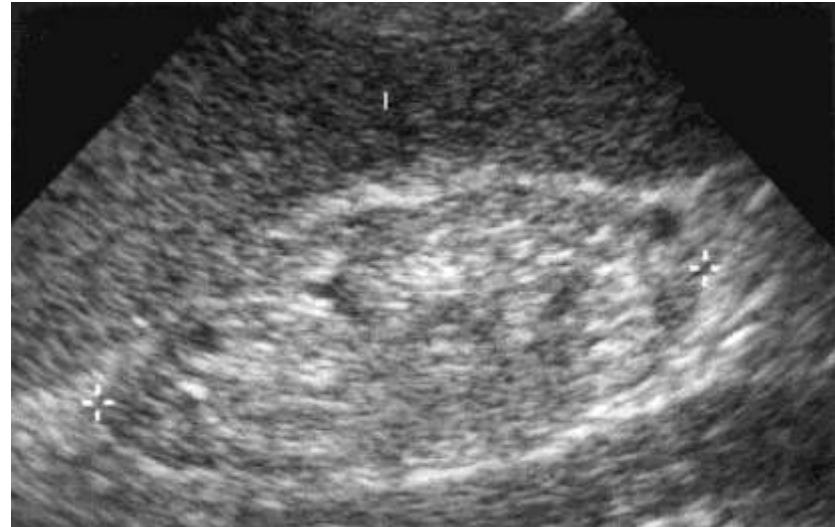
Laboratory investigation

- HB 11.5 g/dl
- WBCs 7.7 $\times 10^9$ /L
- PLT 289 $\times 10^9$ /L
- Na 134 mmol/L
- K 5.6 mmol/L
- Sr cr at time of tonsilitis 0.9 mg/dl, then became 3.5 mg/dl at time of her referral
- ESR 46 mm/h
- CRP 49 mg/dl
- LFT normal
- HB a1c 7.1

- Urine dipstick pt+++, and hematuria +++++
- Urinary albumin 2.8 gm/d
- Dysmorphic urinary RBCs
- Chest x ray, and ECG were normal
- Renal US was completely normal (11.2 and 11.8) no backpressure, normal ecchogenicity and CMD.



Renal Ultrasound



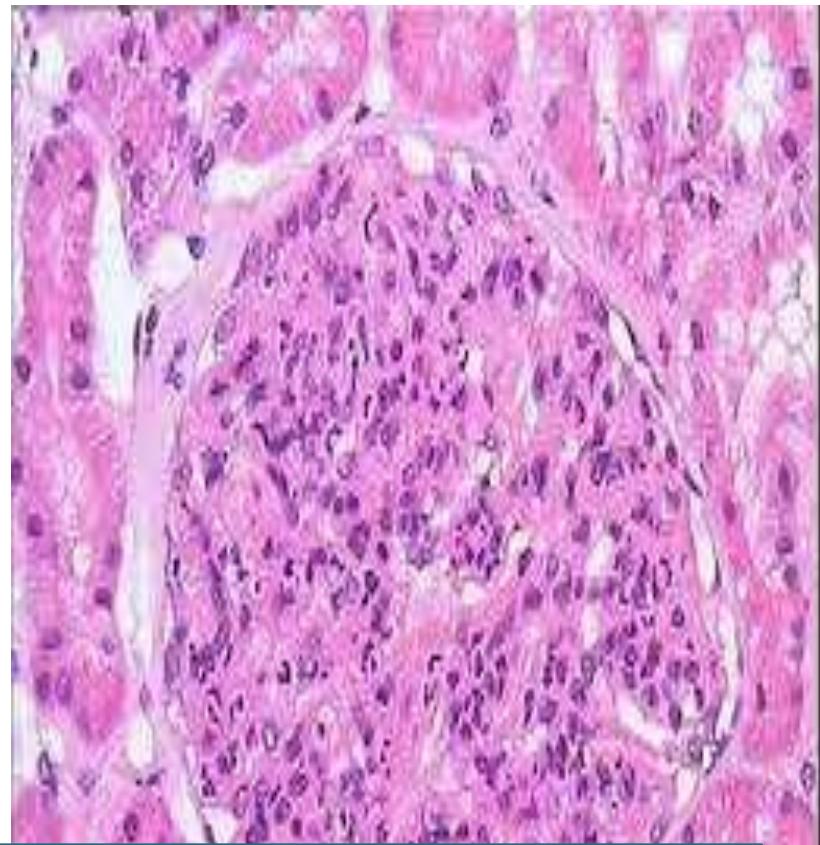
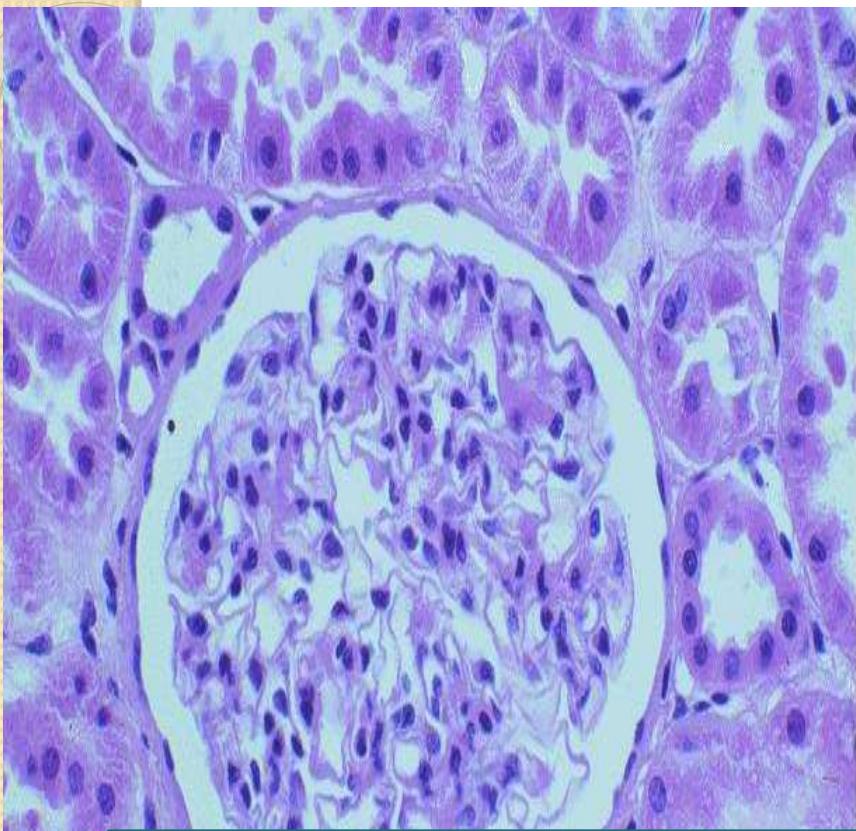
DD

- Post-streptococcal GN
- IgA nephropathy
- Drug induced acute tubulointerstitial nephritis.

What further investigation would you perform ?

- ANA, Anti ds-DNA
- C3, C4 (consumed)
- Anticarriolepin , anti sm antibody
- ANCA
- Anti GBM ab
- Throat swab and ASO ab (400 , normal up to 200 iu/ml) and anti DNase ab (I440, normal up to 85iu/ml)

Renal biopsy



Diffuse proliferative GN

Treatment and follow-up

- Amlodipine was given 5mg/d.
- Furosemide 40mg/d
- Lisinopril 2.5mg/d
- Her kidney function, and edema improved over the next few days
- Few weeks later her blood pressure returns to normal .

Case 2

Case history

- A 32ys old secretary female presented with joint pain, lethargy, fever, and rash
- No significant past medical history
- She has been unwell for around 6 month when had aches in her finger joints so, typing was very difficult, this associated with some stiffness.

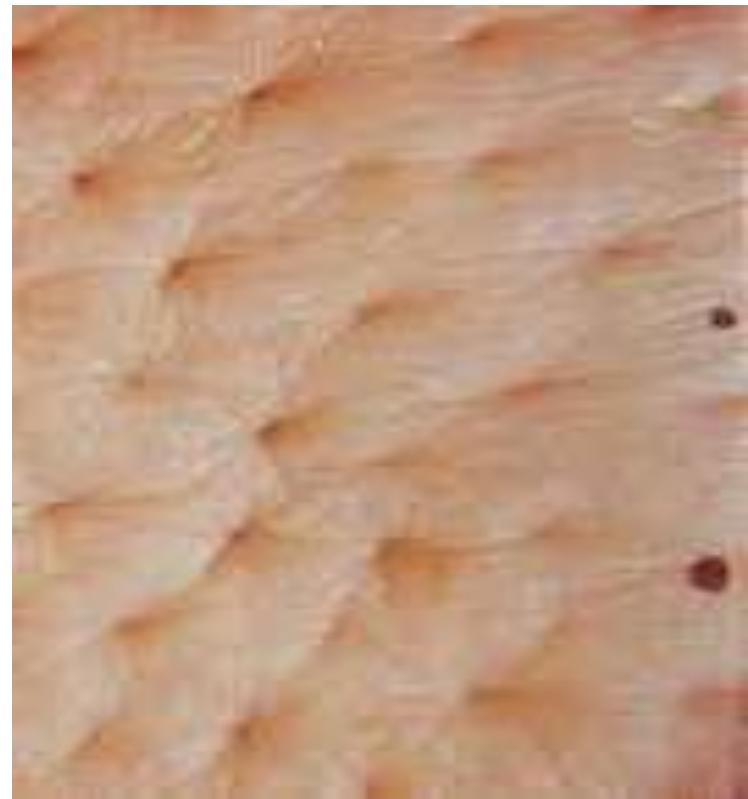
Facial rash & oral ulcers

- Appeared 1 month ago after a day at seaside, and persisted (arm, neck upper chest and checks).
- She had multiple oral ulcers which was unusual for her



On examination

- Pale conjunctiva and palmer crease
- Blood pressure 150/85
- Chest shows absent air entry and stony dullness by percussion on the basal lung fields.
- heart and abdomen examination were normal.
- Bilateral soft pitting LL edema .
- Peau d'orange of the anterior abdominal wall



Laboratory findings

- Hb 9.1 g/dl MCV 82
- WBCs $10.2 \times 10^9 /L$
- PLT $567 \times 10^9 /L$
- Na 138 mmol/l , K 5 mmol/l
- Serum creatinine 2.1 md/dl
- ESR 110 mm/h , CRP 15 mg/dl
- Serum albumin 2.3 mg/dl
- Urine dipistik shows pt++++ ,and blood +++
- 24 hour urinary protein was 4 gm/d
- Urine microscopy shows RBCs casts.



ACR criteria lupus classification

1. Malar rash
2. Discoid rash
3. Photosensitivity
4. Oral ulcers
5. Renal (hematuria, proteinuria, RBCs cast or renal impairment)
6. Serositis
7. Arthritis
8. CNS (psychosis and seizures)
9. Hematologic (hemolytic anemia ,leucopenia, thrombocytopenia, or lymphopenia)
10. ANA
11. Immunologic disorder (anti-ds DNA, anti Sm ab, and antiphospholipid antibodies)



Further investigation

- Renal US was normal
- ANA, anti-ds DNA, anti –Sm, and anticardiolipin were +ve
- C3 low normal , C4 very low

What is the next step?

Renal biopsy

- Lupus nephritis is classified depending on the severity and extent of the lesion into 6 classes (I-IV).
- According to the histopathological class , the treatment decision is always taken .

ISN/RPS Classification of Lupus Nephritis

ISN/RPS (2004)

Class	Definition
I	Minimal mesangial LN Normal glomeruli by LM, but mesangial immune deposits by IF
II	Mesangial proliferative LN Mesangial hypercellularity with mesangial immune deposits
III	Focal LN III (A): Purely active lesions: focal proliferative LN III (A/C): Active and chronic lesions: focal proliferative and sclerosing LN III (C): Chronic inactive lesions with glomerular scars: focal sclerosing LN
IV	Diffuse LN IV-S (A) or IV-G (A): Purely active lesions: diffuse segmental (S) or global (G) proliferative LN IV-S (A/C) or IV-G (A/C): Active and chronic lesions: diffuse segmental or global proliferative and sclerosing LN IV-S (C) or IV-G (C): Inactive with glomerular scars: diffuse segmental or global sclerosing LN
V	Membranous LN
VI	Advanced sclerosing LN ≥90% of glomeruli globally sclerosed without residual activity

Case 3

- 82 ys old female who lives alone, was found having had a fall. She couldn't get up because of pain in her hip. She dragged some blanket to keep her warm and remained there until the next evening.



- Her past medical history was irrelevant apart from mild small joint arthritis, TIAs 10 yrs ago and hyperlipidemia. So, she was kept on aspirin and statin .
- She was not diabetic or hypertensive.

On Examination

- she was a slim female , temp. 36° c , with dry mm and reduced skin turgor.
- pulse 98 b/m , bl pressure 105/65, JVP is not visible.
- heart examination revealed an ejection systolic murmur on the aortic area which not radiate to the carotids.



On Examination

- O2 sat.98% . Chest and abdomen were free.
- She had a large bruise on her rt. buttock with significant reduced range of ipsilateral hip movement.



Resuscitation

- The airway and breathing was satisfactory , but she was IV volume depleted
- She received intravenous fluids in the form of normal saline until lab. Investigations were done.



shows: Investigations

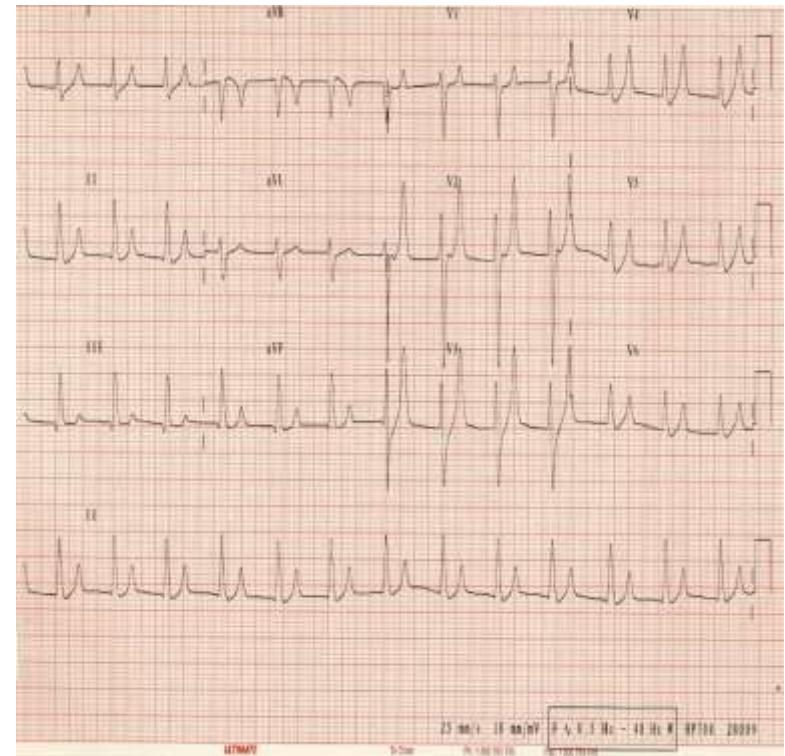
- Hb 11.8 gm/dl, MCV 85, WBC 6.5 , platelet 259.
- Na 150 mmol/l , K 7.1, Sr Cr 2.1 mg/dl.
- Sr Ca+ 7.5 mg/ and, Sr. PO4 8.3 mg/dl.
- Alb.3.5 gm/dl CRP 7 mg/dl. RBG 90 mg /dl.

Investigations Done:

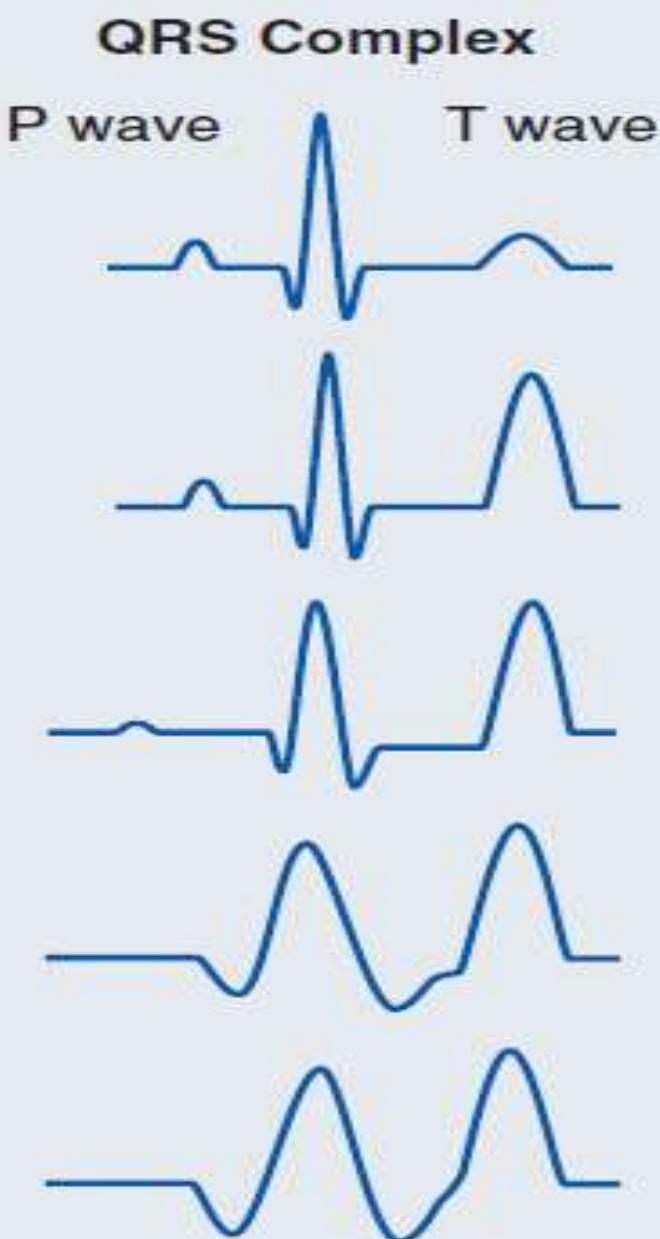
- Urine examination:
- Dark red discolouration,
- By dipstick: blood +4 , and Protein + 1 and glucose



- Chest and hip X ray : normal
- ECG : sinus rhythm , peaked T waves



ECG Changes in Hyperkalemia



Approximate Serum Potassium (mmol/l)

~4

6–7

7–8

8–9

>9

Normal

Peaked T waves

Flattened P wave,
prolonged PR interval,
depressed ST segment,
peaked T wave

Atrial standstill,
prolonged QRS duration,
further peaking T waves

Sine wave pattern

Further medications

- As regard the hypernatremia, the normal saline was stopped and replaced by 5% dextrose .
- she received medication for hyperkalemia in the form of:
 - IV Ca gluconate
 - IV glucose and insulin.

Questions ?



What is the cause of her dark urine?



Why she is hyperphosphatemic and hyperkalemic?



What is the cause of her acute renal impairment?

What is the cause of her dark urine?

Dark brown urine with +ve blood by dipstick but no RBCs or casts most probably due to myoglobinuria or haemoglobinuria.

- Red urine
- Hematuria
- myoglobinuria vs haemoglobinuria

Why myoglobinuria?

- She had a fall and period of immobility in a fixed position on the floor , with past history of statin medication
- the above suggest skeletal muscle destruction and release of its content “myoglobin”.

What is the most likely diagnosis?

- A case of Rhabdomyolysis complicated with ARFwhy?
 1. Probable presence of myoglobinuria
 2. Hypocalcaemia and hyperphosphatemia
 3. Hyperkalemia
 4. Compatible history of trauma, prolonged immobilization and statin therapy.

What is further inv. should be done?

- Creatine kinase (CK) specially MM isotype and renal ultrasound.
- It was done and the result :68,000 iu/l normal range (25-195) .
- Renal ultrasound was completely free.

How this case was treated ?

- Statin was stopped.
- Rehydration therapy was continued to insure adequate urine output to prevent casts formation
- Alkalinisation of the urine.
- Heamodialysis

she was maintained on the above measures for 1 week until complete recovery occurred.





Thank you